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FIVE-COMBED BAT-FLEAS (*NYCTERIDOPSYLLA*).

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NOTES ON THE FIVE-COMBED BAT-FLEAS FORMING THE GENUS *NYCTERIDOPSYLLA*,* Oudemans.

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(PLATE I.)

IN the December number of the 'Entomologist' for 1908, p. 281, we described a new species of five-combed bat-flea under the name of *Nycteridopsylla longiceps*, comparing it with another British species which we identified at that time as *pentactenus*, Kolenati. Our identification was based on specimens from Kolenati's collection preserved in the Vienna Museum, with which the British ones agree fairly well. This identification has now proved to be erroneous, and we think therefore that a general survey of all the known species of the genus *Nycteridopsylla* may be attempted with advantage.

1. *Nycteridopsylla pentactenus*, Kol.

Ceratopsyllus pentactenus, Kol., Parasiten der Chiropteren, p. 32, no. 3 (1856, Brünn).

C. tetractenus, Kol., Parasiten der Chiropteren, p. 32, no. 4 (1856, Brünn); *id.*, Hor. Soc. Ent. Ross. vol. ii. p. 39 (1863).

Nycteridopsylla pentactena (!), Oudemans, Tijdschrift voor Entomologie, Verslag, p. lix (1906); Dampf, Schrift. Phys.-ökon. Ges. vol. il. p. 42 (1908, Königsberg).

Kolenati originally described two species in 'Die Parasiten der Chiropteren' under the names of *pentactenus* and *tetractenus*, which he subsequently united under the latter name in the 'Horæ Societatis Entomologicæ Rossicæ.' The description and figure are insufficient, but two characters are mentioned which refer to this species only. In the 'Parasiten der Chiropteren' Kolenati states, under *pentactenus*, that the second segment of

* *Nycteridopsylla*, Oudemans, Tijdschrift voor Entomologie, Verslag, p. lviii (1906).

the antenna bears six long bristles, while in the 'Horæ' the six bristles placed before the eye are noted as a character. In the specimens kindly forwarded to us by Dr. Oudemans there are five or six long bristles on the second segment of the antenna, while in the other two species of *Nycteridopsylla* there are only one to three of these long bristles. The second character, again, applies only to this species. We therefore concur with Dr. Oudemans in identifying this insect with *N. pentactenus* of Kolenati.

N. pentactenus is easily recognized by the head (Pl. I. fig. 1, ♂), the long bristles of the body, and the modified segments. The metathoracical sternite bears near the posterior edge a bristle which nearly reaches to the hind edge of the epimerum. The dorsal bristles of the thorax and abdomen are rather shorter than the lateral ones, while in the males of *eusarca* and *longiceps* the dorsal ones are prolonged. Dampf has given a fairly correct figure of the clasper of the male. The ninth sternite resembles that of *longiceps* (cf. Entom. 1908, Pl. VIII.), but the distal portion is more curved upwards, somewhat resembling the runners of a sleigh. The seventh abdominal sternite of the female is represented on our Plate (fig. 5). This sternite differs very essentially from that of the allied species. It has one sinus on each side, the lobe above the sinus being very broad and strongly rounded, while the lower lobe is narrow.

Dr. Oudemans obtained this species off *Vesperugo serotinus* at Arnheim, in Holland. There are no examples of it among those of Kolenati's specimens preserved in the Museum at Vienna, nor have we seen it from any other collection, with the exception of a single male example received from the Hazai Zoologiæ Laboratorium at Budapest, taken off *Plecotus auritus* in Hungary on December 15th, 1908. The species, however, may be expected to occur in Great Britain.

2. *Nycteridopsylla eusarca*, Dampf.

Nycteridopsylla eusarca, Dampf, Schrift. Phys.-ökon. Ges. vol. xlvi. p. 398 (1908, Königsberg); *id.*, l. c. vol. il. p. 45, fig. 3 (1908).

The head (Pl. I. fig. 2, ♂) bears only two long bristles on the frontal portion, and the club of the antenna is longer than in *pentactenus*. The dorsal bristles of the thorax and abdomen are prolonged in the male. The modified segments of both sexes are quite different from those of *pentactenus*. The non-movable process of the clasper of the male is short and broad, the apex being rounded, except on the distal side. The finger is much broader than in *pentactenus*, being widest above the centre. The seventh abdominal sternite of the female has a double sinus on each side as shown in Pl. I. fig. 4. The lobes of this sternite do not actually lie in one plane, as represented in the figure; the sinus therefore does not appear so large in an unmounted speci-

men as in a mounted (flattened) one. The size of the lobes varies somewhat in different individuals.

Kolenati's specimens in the Vienna Museum belong to this species. *N. eusarca* is widely distributed, and apparently the commonest of the five-combed bat-fleas. It appears to vary geographically, as the specimens before us from different countries do not exactly agree with one another. The material, however, from the Mediterranean countries which we have is quite insufficient to decide such a delicate point, and we therefore can at present establish but two geographical races.

(a) *Nycteridopsylla eusarca eusarca*, Dampf, l. c.

The author of *eusarca* has kindly given me in exchange a male and female of this form. These two specimens show that Dampf must have made a mistake when he especially stated that the head of *eusarca* did not bear any bristles along the posterior edge. All our specimens of this species have a row of bristles in that place, as in the allied species (Pl. I. fig. 2). The movable finger of the clasper of the male is rather broad, being but slightly narrowed towards its base. The eighth tergite of the male has three long bristles at the upper edge between the stigma and the apical margin, besides a few shorter ones on the side.

We have no specimens exactly agreeing with this form except the pair of co-types from East Prussia. A series of Austrian specimens are intermediate between *N. e. eusarca* and the British form described below, these Austrian specimens having the same small size as *N. e. eusarca*, while in the modified segments of the male they approach the British subspecies.

(b) *Nycteridopsylla eusarca major*, subsp. nov.

Ceratopsylla pentactenus, Saunders (nec Kolenati, 1856, err. determ.), Ent. Mo. Mag. (2), vol. iii. p. 66 (1892).

Nycteridopsylla pentactenus, Rothschild (nec Kolenati, 1856, err. determ.), Entom. vol. xli. p. 281 (1908).

Both sexes are distinctly larger than in *N. e. eusarca*. The eighth tergite of the male bears four long bristles at the dorsal edge distally to the stigma; the movable finger of the clasper, though varying somewhat in individual specimens, is always strongly widened above the centre on the proximal side (Pl. I. fig. 3); the non-movable process, moreover, is broader than in *N. e. eusarca*. The tibiæ have a few more lateral bristles on the inner and the outer side in both sexes. The lower lobe of the seventh sternite of the female is on an average broader than in Continental specimens.

We have three males off *Scotophilus noctula*, obtained by Dr. D. Sharp at Cambridge in January, 1892, and one male and five females from the same locality and host collected by Mr.

William Farren in 1900 and 1903. This species appears to be local in the British Islands. We have not found it or heard of it being taken on Noctules from any locality other than Cambridge.

3. *Nycteridopsylla longiceps*, Rothschild.

Ceratopsylla pentactenus, Rothschild (nec Kolenati, err. determ.), Novit. Zoolog. vol. ii. p. 66 (1895); *id.*, l. c. vol. v. p. 542 (1898).

Nycteridopsylla longiceps, Rothschild, Entom. xli. p. 281 (1908).

This species, when originally described in the 'Entomologist,' was, as stated above, compared with *N. eusarca major*, that form being then erroneously identified as the true *pentactenus*. The male of the present species can be recognized at once by the great length of the head. In the female, however, this difference is not so apparent, as in *eusarca* the length of the head is considerably greater in the female than in the male. The modified segments of both sexes of *longiceps* are very distinctive taxonomic characters. In the male the movable finger of the clasper is very broad, and the apex of the ninth sternite is very much more obtuse than in *N. eusarca*. The seventh sternite of the female has but a single sinus on each side, the lobe above the sinus projecting far less than the one below it.

We have received examples of this species from Great Britain, Firenze (Italy), and from Adana (Asia Minor). In fact, it appears to be the only member of the genus which is fairly widely distributed in the British Islands. Our British specimens have been collected from the following hosts: *Scotophilus pipistrellus*, *Plecotus auritus*, and *Vespertilio nattereri*.

4. *Nycteridopsylla bouchei*, Oud.

Nycteridopsylla bouchei, Oudemans, Tijdschrift voor Entomologie, Verslag, p. lix (1906).

Pulex vespertilionis, Bouché, Nov. Acta Acad. Leop. Carol. xvii. i. p. 508 (1835).

? *Typhlopsylla hexactenus*, Taschen., Die Flöhe, p. 89 (1880).

Dr. Oudemans renamed *Pulex vespertilionis* of Bouché under the above name, stating that he considers this insect to belong to his new genus *Nycteridopsylla* on account of its possessing an eye. In Bouché's original description no reference is made to an eye at all, and we are inclined to think that Taschenberg was correct in considering Bouché's species to be identical with *hexactenus* of Kolenati. Dr. Oudemans, however, is correct in rejecting the name *vespertilionis*, as it had previously been employed by both Curtis* and by Dugès.†

* *Ceratophyllus vespertilionis*, Samouelle, in Curtis, Brit. Ent. vol. ix. No. 417 (1832), though Samouelle never described or mentioned any *Pulex vespertilionis*.

† *Pulex vespertilionis*, Dugès (nec Bouché), Ann. d. Scienc. Nat. vol. xxvii. p. 161 (1832).